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Cubellis completes solar panel system at Deer Island Treatment Plant

August 13, 2008 - Construction Design & Engineering

Cubellis, a national architecture, interior design and engineering services firm, has completed work for the Mass. Water Resources Authority (MWRA) and Borrego Solar Systems, Inc., on the design and installation of a roof-mounted photovoltaic (solar panel) system at the Deer Island Treatment Plant, located on Deer Island in Boston Harbor.

Cubellis provided structural and electrical engineering services on the project, consisting of a 100 kW roof mounted system. "By utilizing wind load calculations, we were able to verify the capacity of the roof connectors to hold the panels down in the event of very high wind loads in excess of 100 mph, well above the industry standard," said James Trant, P.E., principal, structural engineering at Cubellis. The Deer Island roof-mounted project was conceived in response to governor Patrick's Executive Order 484, "Leading By Example - Clean Energy and Efficient Buildings," issued April 18, 2007. That Executive Order sets ambitious standards for reduction of energy use and greenhouse gas emissions by state agencies, as well as increased use of renewable power, 15% of state government energy use by 2015, 30% by 2020.

"The solar power system at the Deer Island Water Treatment Plant is the type of project that embodies Massachusetts' progressive, commitment to renewable energy, and it is a great example of the Commonwealth Solar Initiative and the other state programs at work," said Brendan Neagle, vice president of business development at Borrego Solar Systems, Inc.

Rebate Program Buffers the Cost of Sustainable Design

As part of that commitment, the state launched Commonwealth Solar, a rebate program launched in January to help lower the cost of purchasing and installing solar electric power. The \$870,000 Deer Island solar panel project was funded by the \$310,000 Clean Renewable Energy Bonds (CREBs) loan and \$560,000 from the Division of Energy Resources. Electricity produced by the solar panels will be used on-site to reduce the amount of electricity purchased by Deer Island. Additionally, the energy produced by these solar panels annually will offset the equivalent of 83 metric tons of CO₂.

"This project presented some unique design and installation challenges due to the plant's roof configuration and various shading obstacles, but we were able to utilize Cubellis' innovative designs to overcome these hurdles and make this project a reality," said Neagle. "We look forward to ongoing success in Mass. and throughout New England as more and more businesses and government buildings continue to turn to solar power for their energy needs."

"This site was selected because it has large unobstructed roof sections that would easily accommodate photovoltaic arrays, and the roof, having been resurfaced three years ago, is in very good condition," said Trant. "The panels are designed like sails, and the winds generated in that location are substantial."

"This site represented a perfect application for a photovoltaic system of this size," said Mark Rattenbury, PE, principal, MEP engineering at Cubellis. "It is an impressive installation that reinforces the commonwealths commitment to clean energy and efficient buildings. The solar installation at Deer Island is one of 12 solar projects under way at state and community college campuses, the Soldiers Home in Chelsea, and Department of Correction facilities. The teams at Cubellis are proud to be a part of this sustainable commitment as we participate in developing projects of this nature."

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